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A Program Evaluation Model: Using Bloom's Taxonomy to Identify Outcome Indicators in Outcomes-Based Program Evaluations

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Abstract

Outcomes-based program evaluation is a systematic approach to identifying outcome indicators and measuring results against those indicators. One dimension of program evaluation is assessing the level of learner acquisition to determine if learning objectives were achieved as intended. The purpose of the proposed model is to use Bloom's Taxonomy to guide program and curriculum designers through the challenging process of identifying, classifying, and clearly communicating specific outcome indicators by which to evaluate their programs.

Introduction

Operating in the current era of escalating accountability to sponsoring agencies and accrediting bodies, accurate program evaluations are becoming critical in the increased competition for funding. Because resources are limited, greater expectations for demonstrated efficiencies and performance outcomes are mounting.

Program Evaluation

Program evaluations are conducted to assess the quality of a program and serve two main functions: to evaluate process efficiencies and to evaluate program outcomes. Process evaluations focus on the relevancy of content and on implementation practices in order to identify ways in which to improve upon program delivery, services, and administration. Outcomes evaluations focus on assessing program results, based on participant learning and the impact of this learning for stakeholders such as students, funding agencies, and the greater community. Outcome measurements "assess the extent to which a program has achieved its intended results. The main questions addressed are: What has changed in the lives of individuals, families, organizations or the community as a result of this program? Has this program made a difference? How are the lives of program participants better as a result of the program?" (The Evaluation Forum, 2000, p. 9).

Effective impact assessment includes a differentiation between outcome indicators and program outcomes. Outcome indicators are specific performance elements that are targeted, measured, and tracked; program outcomes are the demonstrated differences the program has made, measured by the indicators.

The Practitioner's Role in Assessment

Program evaluations are only as valid as the metrics upon which they are based. Unreliable outcome indicators produce flawed program evaluations. Demonstrable and accurate assessment measures can guide the design of learning activities that align measures of success with intended learning objectives. Keen practitioners develop a proficiency in multi-faceted assessment that is grounded in theory and spans the learning spectrum at various levels. A widely accepted measurement of multi-dimensional learning is that of Bloom's et.al Taxonomy of Learning Domains (see Appendix A). The taxonomy clearly identifies and delineates between levels of learning in each of the cognitive, psychomotor, and affective domains. To ensure outcome indicators are accurate for program evaluations, instructors must be proficient at not only recognizing learning at each of these levels, but also at designing corresponding objectives, activities, and metrics by which to assess attainment of the learning objectives.

12-Step Outcomes-Based Program Evaluation Model

Using the 12-Step Outcomes-Based Program Evaluation Model (see Appendix B), instructors, program administrators, and advisory committees can all take an active role in designing and conducting outcomes-based program evaluations that include specific and accurate metrics highly valued by program funders and accrediting bodies.

Step 1

Articulate a program overview. What is the overarching purpose of the program? Why does the program exist? What will participants be able to do after successful completion of the program? What difference(s) will the program make? What will be the measurable impacts of the program to the stakeholders? Design an evaluation plan. What are the expected outcomes of the program? What (if any) are the current standards by which the program will be measured? How/when will outcomes be measured? What are your specific outcome indicators?

Step 2

Outline the content of the program and determine the number of courses required to cover the program content. Identify the content for each course. Include the overarching Knowledge, Skills, and Attitudes (KSAs) that completers will be expected to demonstrate.

Step 3

Divide each course into units. List all the appropriate and relevant KSAs for each unit.

Step 4

Using Bloom's Taxonomy, determine the targeted level within each learning domain for each KSA in each unit.

Step 5

Once the level of Domain has been targeted for each KSA, write an appropriate learning objective for each KSA.

Step 6

Design an appropriate learning activity for each KSA.

Step 7

Design an appropriate evaluation metric for each KSA.

Step 8

Deliver lessons and administer evaluations.

Step 9

Analyze evaluation data such as class averages, quantitative data (production, performance time), and qualitative data (observations, perceptions, and/or narrative comments). Note that although data are collected on individuals, program results (not individual results) will be reported. Look for emerging trends during the data analysis process.

Step 10

Compare aggregate data to expected or to previous outcomes such as credentialing standards or benchmarks.

Step 11

Make recommendations for improvements at the unit, course, and program levels.

Step 12

Write a summative report for the Outcomes-Based portion of the Program Evaluation, addressing the elements listed in Step 1 of the Model. To what extent did the program fulfill its purpose? To what extent, and at what level, are the completers performing the anticipated KSAs? What difference(s) has the program made to the stakeholders?

Conclusion

The main function of outcomes-based evaluation is to improve the quality of a program by comparing the results with the intended program objectives. Effective assessment involves a continuous, ongoing process to identify successful aspects of the program and to discover the elements that need improvement and further development. These evaluations provide information for decisions concerning future programming. Outcome indicators, provided by instructors proficient in multi-leveled learning assessments, provide solid, valid, and reliable data for accurate outcomes-based program evaluations.

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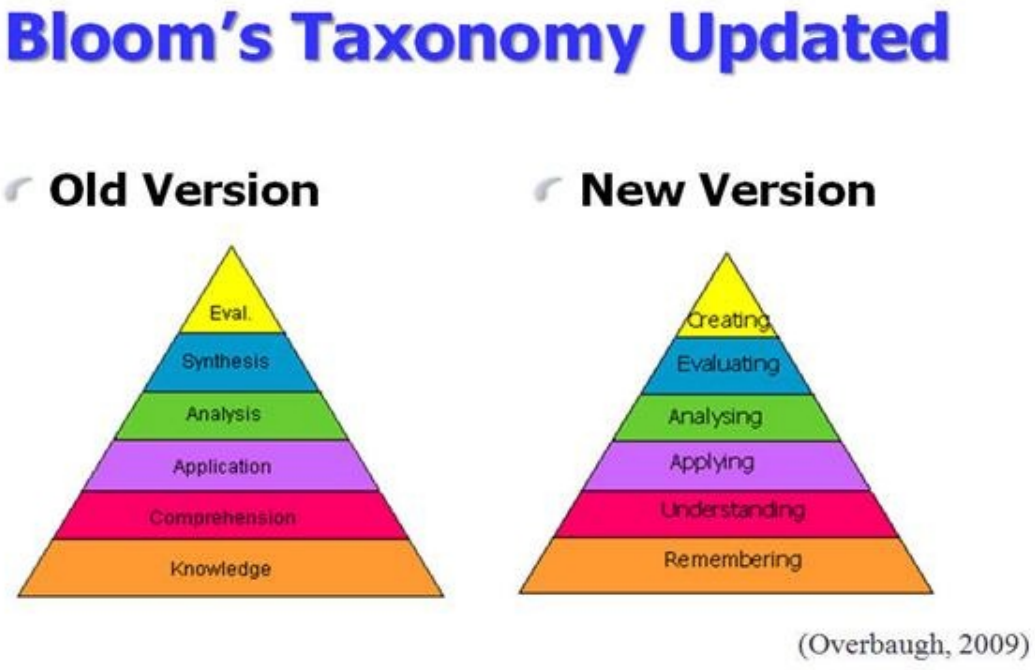
Appendix A

A line of inquiry (Bloom, et al.) has resulted in the following identification of levels and activities in the cognitive, psychomotor, and affective domains of learning.

Cognitive Domain

The cognitive domain involves knowledge and the development of intellectual skills. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. Based on Bloom's model, originated in 1956, Anderson and Krathwohl (2001) propose the following revised levels of cognition:

Remembering: Retrieving relevant knowledge from long-term memory
Understanding: Determining the meaning of instructional messages, including oral, written, and graphic communication
Applying: Carrying out or using a procedure in a given situation
Analyzing: Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose
Evaluation: Making judgments based on criteria and standards
Creating: Putting elements together to form a novel, coherent whole or make an original product



(Overbaugh, 2009)

Psychomotor Domain

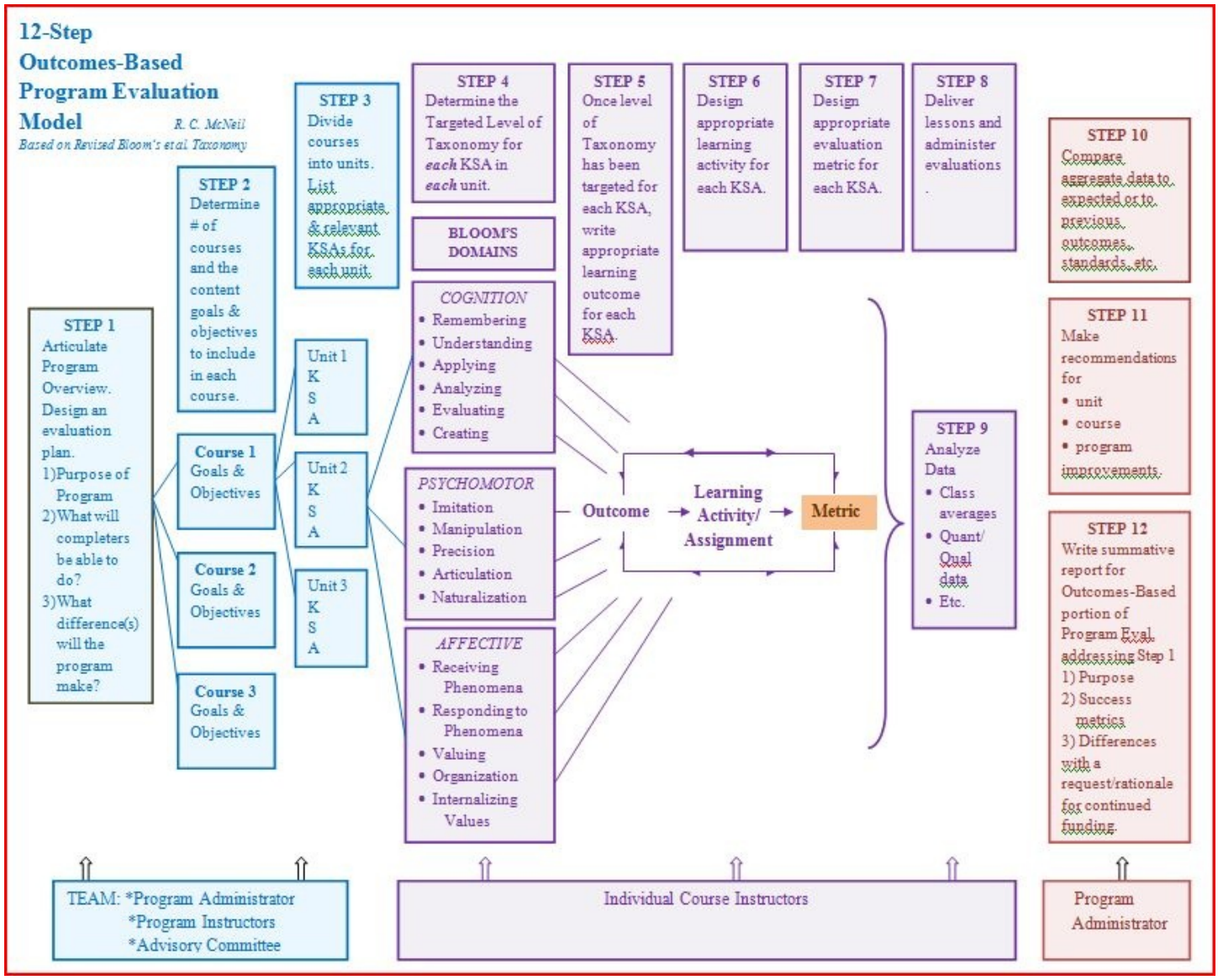
The psychomotor domain includes physical movement, coordination, and use of the motor-skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution. The levels, according to Dave, 1975, include:

Imitation: Observing and patterning behavior after someone else
Manipulation: Being able to perform certain actions by following instructions and practicing
Precision: Refining, becoming more exact. Few errors are apparent.
Articulation: Coordinating a series of actions, achieving harmony and internal consistency
Naturalization: Having high level performance become natural, without needing to think much

Affective Domain

This domain includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes. Krathwohl, Bloom, and Masia (1973) have defined the levels as:

Receiving Phenomena: Awareness, willingness to hear, selected attention.
Responding to Phenomena: Active participation on the part of the learners. Attends and reacts to a particular phenomenon. Learning outcomes may emphasize compliance in responding, willingness to respond, or satisfaction in responding (motivation).
Valuing: The worth or value a person attaches to a particular object, phenomenon, or behavior. This ranges from simple acceptance to the more complex state of commitment. Valuing is based on the internalization of a set of specified values, while clues to these values are expressed in the learner's overt behavior and are often identifiable.
Organization: Organizes values into priorities by contrasting different values, resolving conflicts between them, and creating a unique value system. The emphasis is on comparing, relating, and synthesizing values.
Internalizing values (characterization): Has a value system that controls behavior. The behavior is pervasive, consistent, predictable, and most importantly, characteristic of the learner. Instructional objectives are concerned with the student's general patterns of adjustment (personal, social, emotional).


12-Step
Outcomes-Based
Program Evaluation
Model
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Based on Revised Bloom's et al. Taxonomy
STEP 1
Articulate Program Overview. Design an evaluation plan.
1)Purpose of Program
2)What will completers be able to do?
3)What difference(s) will the program make?
STEP 2
Determine # of courses and the content goals & objectives to include in each course.
Course 1 Goals & Objectives
Course 2 Goals & Objectives
Course 3 Goals & Objectives
STEP 3
Divide courses into units. List appropriate & relevant KSAs for each unit.
Unit 1 K S A
Unit 2 K S A
Unit 3 K S A
STEP 4
Determine the Targeted Level of Taxonomy for each KSA in each unit.
BLOOMS DOMAINS
COGNITION
• Remembering
• Understanding
• Applying
• Analyzing
• Evaluating
• Creating
PSYCHOMOTOR
• Imitation
• Manipulation
• Precision
• Articulation
• Naturalization
AFFECTIVE
• Receiving Phenomena
• Responding to Phenomena
• Valuing
• Organization
• Internalizing Values
STEP 5
Once level of Taxonomy has been targeted for each KSA, write appropriate learning outcome for each KSA.
STEP 6
Design appropriate learning activity for each KSA.
STEP 7
Design appropriate evaluation metric for each KSA.
STEP 8
Deliver lessons and administer evaluations .
Outcome → Learning Activity/ Assignment → Metric
STEP 9
Analyze Data
• Class averages
• Quant/ Qual data
• Etc.
STEP 10
Compare aggregate data to expected or to previous outcomes, standards, etc.
STEP 11
Make recommendations for
• unit
• course
• program improvements.
STEP 12
Write summative report for Outcomes-Based portion of Program Eval. addressing Step 1
1) Purpose
2) Success metrics
3) Differences with a request/rationale for continued funding.
TEAM: *Program Administrator
*Program Instructors
*Advisory Committee
Individual Course Instructors
Program Administrator